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Teaching Intervention to Support Reading Skills in Student with Intellectual Disability

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Abstract

This article examines whether students with intellectual disability (ID) can respond to a teaching tasks with multiple reading skills in the secondary education. Research methodology is mixed with qualitative and quantitative data. We exploited the methodology of observation and the methodology of intervention in a student with moderate ID who was studying at a class of general middle school in region of Peloponnese, Greece. The program used for the student was the Targeted, Individual, Structured, and Integrated Program for Students with Special Educational Needs (TISIPfSENs). A questionnaire was also used, which was distributed to 103 adults. The results of the survey revealed that the student with ID was able to respond to word decoding skills and comprehension skills. Still, adults seemed to have a positive attitude towards use of TISIPfSENs. In the conclusions, it was emphasized that the TISIPFfSENs can support multiple reading skills for students with ID.

Keywords: intellectual disability, TISIPFfSENs, reading skills.

1. Introduction

In Greece, in the context of the inclusive education policy for students with intellectual disabilities (ID), the provision of parallel teaching support is applied under Law 3699/2008. According to this institution, the general education teacher supports all students in the general classroom, and the special education teacher only helps the student with ID. However, despite the placement of students with ID in the classroom, it is difficult to participate in the curriculum because of the ineffective teaching approach (Strogilos, Tragoulia, & Kaila, 2015). This study attempts to highlight differentiated teaching interventions through an educational program to enable students with secondary school IDs to be able to meet as much as possible the learning objectives of their school classroom.

1.1 *Intellectual disability*

According to the diagnostic tool "Diagnostic and statistical manual of mental disorders fifth edition (DSM V)", intellectual disability (ID) is defined with the intelligence and the adaptive behavior (American Psychiatric Association, 2013). As such the diagnosis of intellectual disability is characterized of lacks in mental and adaptive function behavior at the same time during adultness. Students with ID have difficulties in their academic skills due to certain their learning

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characteristics. They have difficulty in keeping their attention and focusing on essential elements of the learning process. They exhibit weakened short-term memory (for example, to keep the teacher's instructions) and working memory (for example, keeping information in memory while performing another cognitive process) while their involvement in learning is suppressed as they have not motivations (Gargiulo & Bouck, 2017). A possible previous failure accompanies them throughout the course of education, and so they have a sense of failure. Still, they present deficits in oral skills (Gargiulo & Bouck, 2017).

- Students with intellectual disability have difficulties in reading skills.
- TISIPfSENs is a proposal for the teaching of multiple reading skills to students with intellectual disability.
- The use of visual meaning facilitators and informal pedagogical evaluation tools are some of the elements that contribute to effective differentiated teaching intervention.

1.2 *Reading interventions for students with ID*

A study by van Wingerden, Segers, van Balkom and Verhoeven (2017) examined the linguistic and cognitive factors that affect students' reading skills with a 60.38 IQ (Intelligence Quotient). The researchers compared the skills of reading comprehension, decoding, acoustic comprehension, and the factors that contribute to their conquest, such as vocabulary, grammar, short term memory, rapid automatic naming and functional memory, among students with ID and their peers developing normally. They concluded that the skills of students with ID fall short of the skills of their peer group.

Until recently teachers of reading skills in weak readers or students with ID were focusing in teaching of sight words. In international bibliography there are a lot of researches which highlight the efficiency of teaching sight words to weak readers or students with special educational needs (SEN). Spector (2011) when referring to students with Autism Spectrum Disorder (ASD) claimed that this population can learn sight words by evaluating differential positive reinforcement, systematic prompting and visual supports. Also, Van der Bijl, Alant, and Lloyd (2006) studied the techniques of modified orthography (MO), traditional orthography (TO), their combination and their comparison. In their results they stated that all three techniques help students with ID and mostly the combination of MO and TO when using right the images which can contribute effectively in the teaching of sight words without preventing students with ID from learning the printed form of the word.

The use of images has a controversial role in the teaching of sight words to students with ID. According to Fossett and Mirenda (2006) many researchers claim that the use of images distracts students making them losing focus when it comes to the recognition of the word. However, they suggest that images can be useful if they are used in ways that promote active and not passive learning. These same researchers made a search to compare paired associate and picture-to-text matching techniques for teaching a small corpus of unknown words to two children with developmental disabilities. Results showed that the participants dealt with activities which demanded the active combination of images and words. According to the same researchers, the question of using the image for the teaching of sight words doesn’t need to focus on whether the images should be used but how they should be used. Furthermore, Didden et al. (2006) refer that the sight word can be incorporated in the image and that the fading of the image has proven to be effective in the teaching of children with ID. During the fading of the incentives (image for example) the focus of the student moves gradually in the sight word. Results of the research indicated that the procedure word alone was more effective. However, this teaching can make students with ID make mistakes. During the research certain students with ID had a faster and successful improvement while being taught through picture-fading. In addition, the same researchers concluded that the sight words teaching could be the first step to a complete educational program of reading for students with ID. Finally, according to Richardson et al. (2017) another possible strategy which could ensure that the student pays attention in both the image and the word is the matching of words and images which can benefit the acquirement of key-word reading.

Historically, attention to reading instruction for students with ID focused on sight word recognition, rather than instruction on decoding or comprehending (Bouck & Bone, 2018). However, the teaching of sight words shouldn't be the only way for teaching literacy to students with ID because students are taught words as whole symbols, without considering the matches of letter-sound and they would only recognize the taught words (Allor et al., 2018). During recent years, the interest of researchers for the reading skills of students with ID moves a step further. More particularly, they study the way of acquiring reading and lingual skills based on the belief that the students with ID can learn how to read similarly with their typically grown peers but in a slower tempo (Allor et al., 2010). According to Gargiulo and Bouck (2017), a complete reading program for students with ID needs to have activities of phonemic awareness (the ability to identify sounds units words), phonics (the ability to sound out words), fluency (pace and precision of reading), vocabulary (number of words known or acquired) and comprehension (the ability to understand what is read).

Reading is a complex procedure and is accomplished through abiding the ability of decoding written symbols which are connected while abide to grammar and syntax rules and they produce syllables, words and sentences while they contribute to the understanding skill as a procedure of receiving, process and use the meaning of the word, the sentence or the text that someone listens or reads (Wood-Fields, Judge & Watson, 2015). Referring to the ability of decoding, it has been claimed that typically grown students need to have the phonological awareness skill, namely the ability to recognize the relation between sounds and matching letters and the rapid naming skill to acquire it (Soltani & Roslan, 2013). Decoding is a crucial skill for the inexperienced or weak readers since they could enter and study a decodable text (Cheatham & Allor, 2012). Researchers suggest that despite their difficulties in knowledge growth students with ID can acquire decoding skills. A study of Soltani and Roslan (2013) showed that phonological awareness is a requirement for the decoding skill independently of other phonological abilities and IQ. Furthermore, the results of the bibliography review of Hill (2016) highlight that researchers went beyond the typical approach based on sight words in students with ID, materializing reading interventions based on phonics and highlighted the successful results of students in reading (letter-sound correspondence skills). Also, according to Lemons et al. (2016) many students with ID including children with Down Syndrome (DS), have teachers who are not sure about the kind of reading teaching they should use to amplify their performances. Teachers of children with DS and ID should incorporate more strategies than sight words approach. The same researchers claim that the teachers should provide completed reading interventions which should include activities of phonological awareness and phonics. Similarly, Baylis and Snowling (2012) with their study results encourage teachers to use letter-sound-knowledge activities in students with DS. The goal of their study was to plan an effective program which would promote the reading skills in students with DS, the letter-sound-knowledge skills and the phonological awareness and then examine if the program would bring general benefits to the decoding through non-word reading. Results indicated that al 10 children who took part in the research showed a general amelioration in reading of separate words and texts. Phonic-based instruction can benefit the growth of literacy in children with DS.

Literacy procedure also includes the ability to comprehend any text given to them. Allor et al. (2010) examined if the students with IQ (40-69) had an improvement in their reading skills and if they were better when taught a complete reading intervention. The teaching intervention included multiple skill strands, as concepts of print (title and the authors' name of a book, detecting text from left to right showing individual words), phonological and phonemic awareness (with hand rhythm), letter knowledge, phonemic decoding, word identification, fluency, comprehension strategies, (making and checking predictions, sequencing, making inferences, story grammar, content webbing, and writing summaries) vocabulary, and oral language development. Results showed that students had a statistic improvement in every skill. Similarly, Alberto, Waugh and Fredrick (2013) tried to study reading, teaching and understanding of individual words and connected text with the use of simultaneous prompting. Its' study provided data to support a systemic approach for the teaching of connected text as a material of sight words being taught to make ID students capable of reading a text. Those students had generalized the sight words skills to become independent readers. Also, Buckley and Bird (1993) suggest the following methodology steps for the teaching of reading: acquirement of a fundamental sight vocabulary from the student, identification and matching of sight words, reading and its meaning, the certainty that the student has learned the words he's been taught making sure that the student will enjoy his success, teaching of new words which are necessary for the creation of phrases and sentences, focus in the meaning of words (through real objects or images), understanding of sentences (simplification of grammar and syntax) and finally, teaching of individual vowels, the voices produced by letters , and syllables having as a goal for the student to point a letter and linguistically identifying the sound of it.

Students with ID usually have a limited access when it comes to reading texts because of their limited reading skills, limited access to the teaching procedure, non-support and beliefs of the teachers. For the support of understanding interventions, the story was differentiated by modifying the story, making the story shorter, giving the hero the students' name or by using images and having discussion about the text (Shurr & Taber-Doughty, 2017). According to Fajardo et al. (2014) the technique "easy to read", or that of a simplified text is one of the strategies teachers use to ameliorate the reading-understanding performance of the students with ID to read long texts or texts with technical difficulties. Jones, Long, and Finlay (2007) in their study claim that incorporating images-symbols to texts. Their study focused in the use of Widgit Rebus symbols (Widgit Software). The sample was made of 19 adults with IQ between 50 to 79. Results made it rational to conclude that the addition of Widgit Rebus symbols in written text greatly improves the understanding of some adults with moderate and severe learning problems. However, future research is demanded to reproduce this analysis, extend it in other image-symbol systems and providing instructions about the way with which symbols must be incorporated in a text.

1.3 *Targeted, Individual, Structured, and Integrated Program for Students with Special Educational Needs (TISIPfSENs)*

This article uses differential teaching of multiple reading skills in a student with ID of a general class utilizing a Targeted, Individual, Structured, and Integrated Program for Students with Special Education Needs (TISIPfSENs) (Drossinou-Korea, 2017). TISIPfSENs is analyzed in five phases as it follows:

The first phase of the TISIPfSENs includes the systemic empirical observation during which the teacher of special education studies the case of the student with ID and according to his experience concludes in hetero-observations concerning the individual, family and school history as well as the diagnosis of the Center of Diagnosis, Differential Diagnosis and Support or the medical-pedagogical centers. So, the teacher of special education builds a first image for the students learning profile (Drossinou-Korea, 2017). The learning profile of the student will be completed with the second phase of the TISIPfSENs. The second phase is utilized in the framework of the informal pedagogical evaluation and is suggested for the recording of the skill level of the student in different sectors through the completion of Checklists of control of basic skills

(CBS) (Drossinou-Korea, 2017). In the third phase, the plan of the educational program is structured. The basic elements a teaching plan must have among others are: the time schedule of the teaching intervention, the educational goal and its' analysis in teaching steps (Task analysis) (Christakis, 2013). Finally, the teacher of special education needs to define and record the pedagogical materials. Their choice is done based on the level of the students' intellectual ability, his learning difficulties and his skills. The Forth phase of the TISIPfSENs includes the realization of the educational goal through direct teaching (one by one) using differential teaching methods in the classroom. The place in which the educational intervention is going to take place is defined in this phase (Drossinou-Korea, 2017). Finally, the fifth phase of the TISIPfSENs includes the evaluation of the student and the teaching program as well. The student undergoes an evaluation with similar activities with which he was taught and then he demonstrates whether he understood what he learned or not (Drossinou-Korea, 2017).

2. Purpose

The goal of this study is to highlight multi-language skills teaching intervention through the application of TISIPfSENs. Specifically, we examine the following research questions:

How a TISIPfSENs contributes in the enforcement of multiple reading skills in a student with ID according to quality data?

Furthermore, which is the opinion of adults referring to the contribution of the TISIPfSENs in the enforcement of reading skills in a student with ID according to quantity data?

3. Methodology

The methodology of this study is mixed as it is made of quality and quantity data (Avramidis & Kalyva, 2006). The qualitative data of the research was extracted from the student case study with ID. The quantitative data was collected through a questionnaire, which was completed by some adults.

3.1 *Sample*

In this research we included a case research of a student that was diagnosed by the Center of Diagnosis, Differential Diagnosis and Support with moderate ID. He is in a general class of the middle school in the district of the Peloponnese in Greece. In the general class there is the teacher of general education and the teacher of special education who is sitting next to the particular student. Furthermore, 103 adults from the district of the Peloponnese took part in the research. Out of these 67 were teachers of general education (65%), 22 were teachers of special education (21.4 %), 6 were parents (5.8%) and 2 special education stuff (1.9%). There were many female participants (72.8 %) against males (27.2 %). The adults who took part in the research were asked to evaluate key aspects of the teaching intervention applied to the student with ID through TISIPfSENs.

3.2 *Research tools*

The quality data from the research of the ID student was gathered through the methodology of observation and with the informal pedagogical evaluation. This was done by using the Checklists of basic skills (CBS) of learning readiness and the special education needs according to the Framework Curriculum of Special Education (FCSE) and the Form of the Teaching Interaction (FTI) (Drossinou-Korea, 2017).

(a) Checklists of basic skills (CBS)

The lists are designed to examine either the presence or not of specific characteristics and behaviors. They can be constructed for every each field of development, such as social, sentimental and cognitive skills. Checklists need to be structured by the teachers. Control lists are useful and effective (Herr & Ed, 2012). The use of visual representations for the presentation of data from evaluation activities makes their understanding easier (Given, 2008). CBS of learning readiness contains areas of observation when it comes to Oral language, Psychomotor Activity, Mental skills and Emotional organization skills (Figure 1). CBS of the FCSE contains areas of observation, Learning readiness, Basic academic skills (reading, understanding, writing, speech production), Social skills, Creative activities and Pre-vocational readiness (Figure 2).

The completion of CBS is done through excel panels as it follows (Drossinou-Korea, 2017): in the horizontal lines, teacher exhibits the skills of every area that are evaluated according to interactive pedagogical relationship and experience of the students' performances in class and in behavior. In the vertical lines, teacher exhibits the school semesters regarding the typical and mandatory education counting in ascending order from number 1 which corresponds to the first semester of attending kindergarten up to the 26th semester of study, corresponding to the third grade of the second semester of the (6th class of Secondary education) Lyceum. The horizontal compact line that penetrates the horizontal lines, is the "base line" (yellow color) which corresponds to the current semester of the students according to their chronological and/or school age (In this study case of a student, the line is yellow and it was placed on the first semester of the third grade of middle school). The first fluctuation line (black color) shows the disturbed or normal performance of the students in each skill during the initial observation. The second fluctuation line (red color) shows the disturbed or normal performance of the students in each skill during the final observation.

(b) Form of the Teaching Interaction (FTI)

FTI is the less standardized way of observation data collection and does not include predefined questions and answers (field notes) (Given, 2008, p. 342). FTI is abstract data which can be written or recorded. This form includes the students' data, the teaching goal, the date of every teaching intervention and the recording of important crosstalk between teacher and student during the daily teaching intervention.

For the quantity data a special questionnaire was made based on the research question. In the first part of the questionnaire were the questions which outline the social profile of the participants. The second part included questions designed to examine key points of teaching intervention to support language skills in ID students using TISIPfSENs.Questions were of Likert type in which the respondent was called to state the degree of agreement or disagreement in a scale of five points (1= Strongly Agree, 2= Agree, 3= Undecided, 4= Disagree, 5 Strongly Disagree).

3.3 *Methodological procedure of quality research*

The research was conducted in a general high school classroom by the special education teacher who supported the student in literary lessons. The teaching intervention was in the course "Ancient Greek Texts from Translation – Dramatic Poetry – Helen of Euripides" and lasted 9 months. The course of research was based on its five phases governing TISIPfSENs:

3.3.1 *First phase of TISIPfSENs*

Initially the school stuff and the parents of the student had an interview with the researcher-teacher and according to his experience he concluded with hetero-observations referring to the individual, family and school history. The student with moderate ID was 17 years old. He was studying in the third grade (first semester) of general middle school in an agricultural area in Peloponnese.

3.3.2 *Second phase of TISIPfSENs*

According to the CBS of learning readiness in "oral speech" the student was evaluated from the initial observations as quite limited in skills of "clear and precise expression" with a great deviation from the base line (1st grade of primary school, 2nd semester). In "mental abilities" the researcher-teacher of special education recorded lower levels of performance for the student with ID in the areas of "working memory", "visual memory" and "acoustic memory" (4th grade of primary school 2nd semester). Furthermore, the area that has to do with the "focus concentration" was also recorded (2nd grade of primary school 1st semester) (Figure 1). According to the CBS of the frame of the curriculum of special education there were inconsistencies and poor literacy and linguistic skills of the student with ID (Figure 2). Referring to the skills of writing and reading the student could recognize, spell and write all the vowels and consonants of the Greek alphabet and he could write some words such as his name and surname (1st grade of primary school 1st semester). However, he couldn't read fluently, analyze and synthesize enough syllables-combinations like (consonant + vowel). Furthermore, the student couldn't write and read many words except his full name and some specific words required for his own living (toilet, hi etc.). The student couldn't understand a simple and brief text except some sight's words. In general, the student with ID didn't have any phonic skills mechanisms and phonemic awareness. According to the above the student with ID couldn't stand up to the goals of the course of ancient Greek Literature Drama "Helen" and that's where the teaching intervention was done.

3.3.3 *Third phase of TISIPfSENs*

An educational program was planned for the course of Ancient Greek drama of Euripides translated in Modern Greek. The educational program was 2 hours per week in a general class of middle school through the method of direct teaching. The teaching goal was for the student to be able to "decode words by understanding simple sentences" which was divided into 10 teaching steps. The pedagogical material was individualized. We used the multi dimensions with emphasis to the (3D) dossiers for the teaching as well as the meaning the words in this intervention. Dossiers included cards with columns: every card included 10 words while the second column included images. In the third column there were 10 matching movable cards-words and certain visual meaning facilitators which the student was called to identify with stable words when the last column included activities of word coding and decoding. Furthermore, a 3D reading machine was modified for the teaching of understanding little texts. 3D reading machines were structured in two levels: the lower level (cup of the box) includes images in the form of comics which students put in logical chronological order (start, middle and end) to complete the story. The upper level included a story map of the story (characters, place, problem, solution, self-evaluation of the student).

3.3.4 *Fourth phase of TISIPfSENs*

The student using the first column of the card had to observe words and repeat their spelling with the help of the teacher. Afterwards, the student was called to understand the meaning of the words (second column) using the images as a motive of attention enforcement. In the third column the student with ID was called to correspond the stable cards with the moveable ones. In certain moveable cards there were only words and not images. In this fact, the student observed the morphology of the words. Based on the belief that decoding words would help for the better teaching of sight words, the student was called in the fourth column to write down as many words as he could or decode every letter or syllable separately with the help of rhythm (clapping hands). Furthermore, many activities were made in the project folder for the better decoding of words (Figure 3 & 4).

Teaching of understanding skills with 3D reading machine (Figure 5): initially, the student was called to observe images (in the form of a comic) and read the brief text of the dialogue. The dialogues were made of sight words with which the ID student was taught. Subsequently, the student would put in order the images he was given (from three to six) so they would match in sense with the storyline of the story. However, another activity had to be made for the student to understand the plot of the story. In specific, the student with his teacher played a role game putting the heroes of their story and their dialogues in a table. Afterwards, the student needed to fill the story map with moveable cards which had sight word (which he has been taught) on them (Which is the lesson that he is being taught? Who is the author of the book? Who are the heroes of the story? Where does the story take place? What is the problem of the heroes? What solution do they find?). In the end the student should self-evaluate his performance and the teaching material by putting the emoji that expresses him (happy, sad and indifferent).

3.3.5 *Fifth phase of TISIPFfSENs*

The teacher-researcher of special education proceeded to the evaluation of the teaching program. He gathered all the data of the CBS and the FTIs (through sound-recorded visual and video material). Then, wrote down the results of the teaching intervention.

3.4 *Methodology process of quantity research*

The procedure of extraction of quantity research lasted 9 months and was as follows: Initially a bibliography review was made, then the goals were formulated, the research questions were written and then the research tool was designed. Afterwards a pilot research was made, to note possible uncertainties in the formulation of questions and to finalize the questionnaire. For the validity of the structure of the questionnaire a pilot research was done in twenty-eight adults. The validity pointer of the Cronbach-a questionnaire gave a result of 0.88, for the 30 variables. Before the conduct of the research there was a full update to the participants for the theme and the goal of the research, the procedure and the educational benefit of it. Furthermore, the participation of the teachers in the research was voluntary. Afterwards the data was collected and was processed and analyzed with the use of the statistic package S.P.S.S. (edition 23.0).

4. Results

According to the CBS of learning readiness (Figure 1): In “oral speech” the student was evaluated a semester above the initial observation in abilities of “clear and precise expression” (2nd grade of primary school, 2nd semester). Also, after the intervention mostly in “working memory” and “visual memory” there was an improvement of a semester accordingly (2nd grade of primary school, 2nd semester). Similarly, in “attention focus” there was a progress in the performance of the student (3rd grade of primary school 1st semester). According to the initial observation in “sentimental organization” the student with ID showed a low “self-sentiment” and didn’t show enough interest to learn. However, after the teaching intervention there was an improvement in the certain areas of a semester accordingly. During, the initial observation in the CBS of the FCSE, the student was lacking in reading skills (Figure 2). This made it impossible for him to attend the curriculum of his class. Observing more his basic skills like reading, understanding and writing, these results came up during the final observation: the student had an improvement of two semesters (2nd grade of primary school 1st semester) in reading skills (like phonological awareness and letter-sound correspondence) when in comprehension skills there was important improvement: the student had a progress of one semester comparing to the initial observation (1st grade of primary school 2nd semester).

According to the FTI we had the following observations: In general, the differentiated material enforced the "attention focus" and the "interest to learn" of the student. The student ameliorated his clear and precise oral expression referring to understanding questions of the story. The images of the story map were a motive for the student to answer clearly to questions like "who the heroes of the story are?" etc. Similarly, images which accompanied sight words contributed in the enforcement of the visual memory. To the matching of sight words, the student had as much time he wanted to respond to the activity. During the matching of sight words, our initial thought was to remove the images from the moveable cards, but this wasn't effective so, the images remained in moveable cards with difficult words. When the words had two or three syllables with the sequence of vowel-consonant the student did better observing the word and matching it with the moveable card. Referring to decoding skills, we gave the student the chance to write alone as many words as he could. He found interesting the activity in which handclaps determined the letter or the syllable he should spell. However, except the dossiers we had to organize an extra folder with more decoding activities. The student managed, to read 80 new words out of 120 which was our initial goal. The teacher-researcher, using the 80 words, constructed small text (such as a comic) to evaluate the student's comprehension skills. So, the student managed to understand the plot of Euripides ancient drama "Helen". He learned basic points of the story with the help of the story map. For the consolidation of the story's understanding we had to make a "role game". Finally, the self-evaluation of the student in the 3D reading machine contributed positive to his self-sentiment.

According to the questionnaire the participants had a positive point of view towards the contribution of the TISIPfSENs which promoted a complete reading program to students with ID as their answers were between neutrality and complete agreement having as an average score 4.28 out of 5. With their answers they highlighted the most important elements of the TISIPfSENs which promote reading skills of students with ID. In particular:

To the question about the usefulness of individualizing student instruction for students with ID, 71.8% answered they agree or they strongly agree it is useful, 28.2% showed neutrality and less than 5% answered that it hasn't any usefulness (Table 1).

Table 1. Individualizing student instruction

	Frequency	Percentage%	Cumulative percent %
Disagree	5	4.9	4.9
Undecided	24	23.3	28.2
Agree	33	32.0	60.2
Strongly Agree	41	39.8	100.0
Total	103	100.0	

To the question about the usefulness of the evaluation tool "Form of teaching interaction" the outcome seems positive without negative opinions. 89.3% answered they agree or strongly agree it useful when just a 10.7% showed neutrality (Table 2).

Table 2. Form of teaching interaction

	Frequency	Percentage%	Cumulative percent %
Undecided	11	10.7	10.7
Agree	44	42.7	53.4
Strongly Agree	48	46.6	100.0
Total	103	100.0	

To the question about the usefulness of the "Informal Pedagogical evaluation" the outcome seems positive without negative opinions. 87.3% answered they agree or strongly agree it useful when just a 12.7% showed neutrality (Table 3).

Table 3. Informal pedagogical evaluation

	Frequency	Percentage%	Cumulative percent %
Disagree	1	1.0	1.0
Undecided	11	10.7	11.7
Agree	53	51.5	63.1
Strongly Agree	38	36.9	100.0
Total	103	100.0	

About the degree in which the differentiation of t of the text helps students with ID in their reading skills, the participants answered positive or neutral. 97.1% answered they agree or strongly agree it is useful when the rest 2.9% showed neutrality (Table 4).

Table 4. Differentiation of the text

	Frequency	Percentage%	Cumulative percent %
Undecided	3	2.9	2.9
Agree	55	53.4	56.3
Strongly Agree	45	43.7	100.0
Total	103	100.0	

About the degree in which the 3D reading machine helps students with ID in their reading skills, the participants answered positively or neutrally. 97.1% answered they agree or strongly agree it is helpful when 2.9% showed neutrality (Table 5).

Table 5. 3D reading machine

	Frequency	Percentage%	Cumulative percent %
Undecided	3	2.9	2.9
Agree	39	37.9	40.8
Strongly Agree	61	59.2	100.0
Total	103	100.0	

About the degree in which the "dossier" helps students with ID in their reading skills the participants answered positively or neutrally. 98.1% answered they agree or strongly agree it is helpful when the rest 1.9% showed neutrality (Table 6).

Table 6. Dossier

	Frequency	Percentage%	Cumulative percent %
Undecided	2	1,9	1.9
Agree	27	26.2	28.2
Strongly Agree	74	71.8	100.0
Total	103	100.0	

To the question how helpful the images for the reading skills of students with ID are, the opinion of the participants seems positive, without negative answers. 87.4% answered they agree or strongly agree they are helpful when 12.6% showed neutrality (Table 7).

Table 7. Pictures – visual meaning facilitators

	Frequency	Percentage%	Cumulative percent %
Undecided	13	12.6	12.6
Agree	41	39.8	52.4
Strongly Agree	49	47.6	100.0
Total	103	100.0	

5. Conclusions

To TISIPfSENs is a useful pedagogical tool for promoting student integration in mainstream schools (Drossinou-Korea, Matousi, Panopoulos & Paraskevopoulou, 2016). In the present study it functioned as an educational tool of teaching procedure that contributed effectively to the enforcement of the reading skills of the student with ID that studies in a general middle school. This was concluded from the recordings of the quality data in FTI and CBS according to which the student with ID had a progress in his reading skills. Furthermore, according to the opinion of adults this was a result of some of the characteristics of the TISIPfSENs, like the individualizing of the program, the form of teaching interaction, the informal Pedagogical evaluation and the differentiated material (differentiation of the text 3D reading machine, dossier and pictures). According to Lemons, Allor, Al Otaiba, and LeJeune (2012) some of the elements a curriculum needs to have, as applied in our research using TISIPfSENs, is to enhance language skills in students with intellectual disabilities and are as follows: defining a realistic teaching objective and dividing it into teaching steps, implementing multiple differentiated activities escalating difficulty, the implementation of direct teaching and the use of informal pedagogical assessment tools.

Referring to the differential material it is useful to say that the use of pictures as a reading skill teaching technique, enforced the attention focus of the student and acted effectively in activities of sight words, decoding words and understanding of brief texts (like comics). The use of picture can enforce the reading skills of students with ID if they are used properly (Bouck & Bone, 2018). Shurr and Taber-Doughty (2017) using the technique of Picture plus discussion (preliminary debate with photos connected to the text before reading. After this phase, and with the photos still in place, the researcher reads aloud to the student and finally, debates based in photos after text reading) showed that students with ID of middle school responded satisfyingly in understanding text activities. Furthermore, through this study was proven that a student with moderate ID can respond quite well in multiple reading skills having as a goal the acquirement of literacy which is the decoding and text understanding (Fajardo et al., 2014; Ryndak, Morrison & Sommerstein, 1999). This is confirmed from Allor et al. (2013) who studied how students with ID could ameliorate and transfer their reading skills in certain texts. The specimen was made of three students with ID. The study took place in two junior schools and a middle school. Results showed that students with ID could read certain texts (properly modified) when showing improved ability of word decoding. Similarly, Alberto et al. (2013) examined a complete literacy program in students with ID through teaching of sight words and phonics which lead in reading and understanding of connected texts. The results of their study gave birth to expectations about the abilities students with ID can develop.

The basic goal of the study was to suggest a teaching methodology to support reading skills. However, an important limitation of this study is that this methodology was only for student with moderate ID. This makes necessary for the TISIPfSENs which focuses in multiple reading skills to be used in more students with moderate ID, so the results that are extracted would be more valid.

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The authors declare no competing interests.

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Appendix

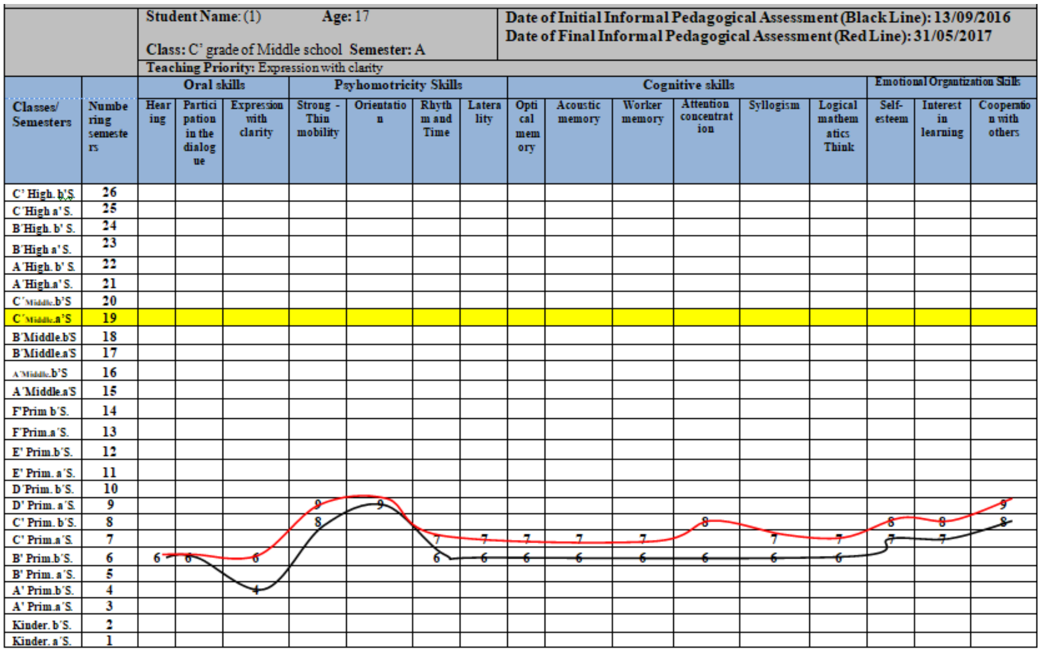

Figure 1. CBS of Learning readiness

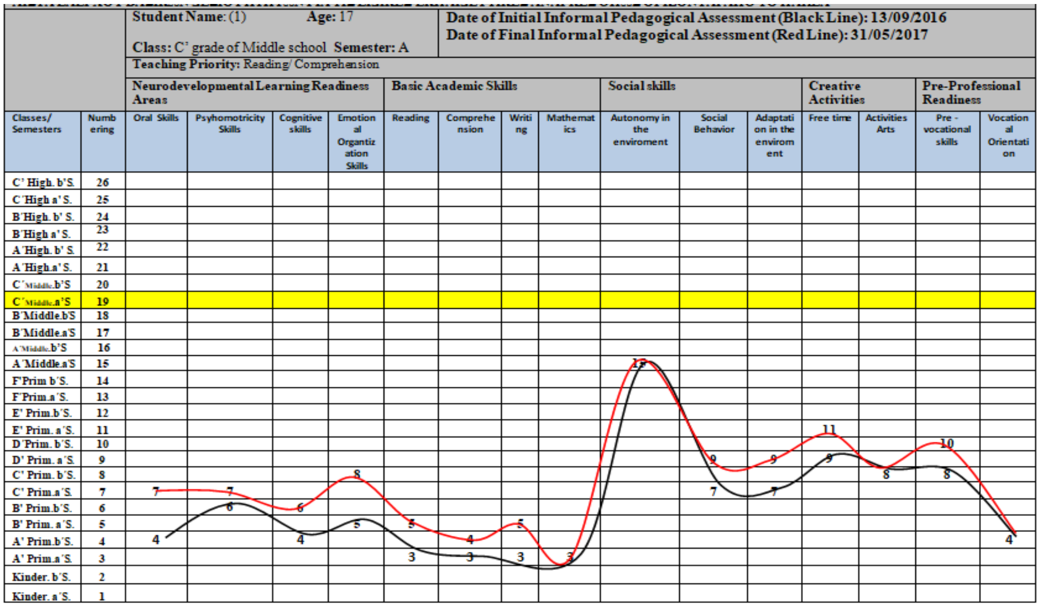

Figure 2. CBS of framework curriculum for special education

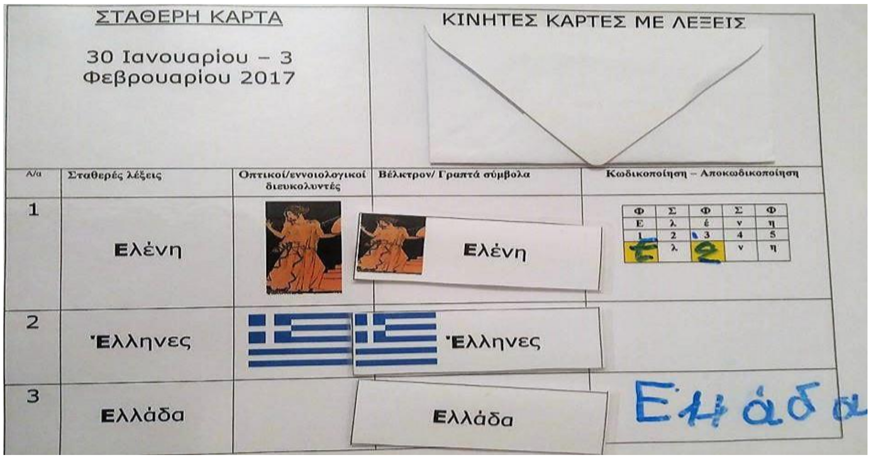

Figure 3. Teaching sight words such as Helen, Greece and Greeks (Dossier)

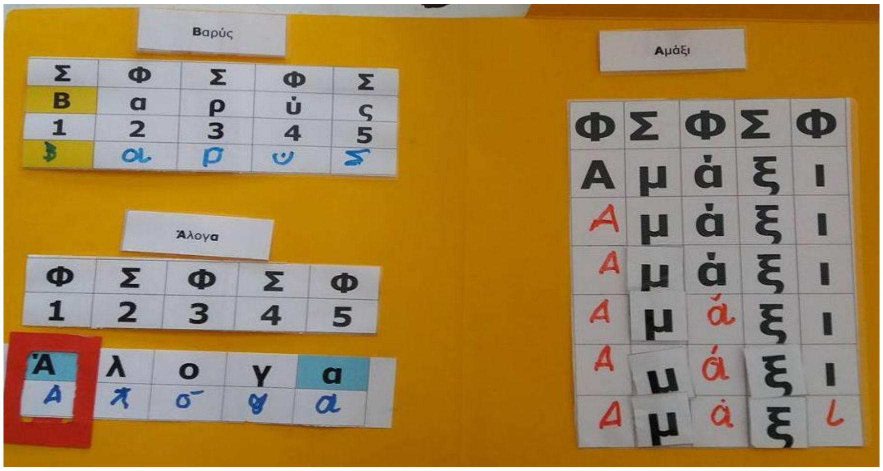

Figure 4. Student with ID decodes words such as heavy, horses and car

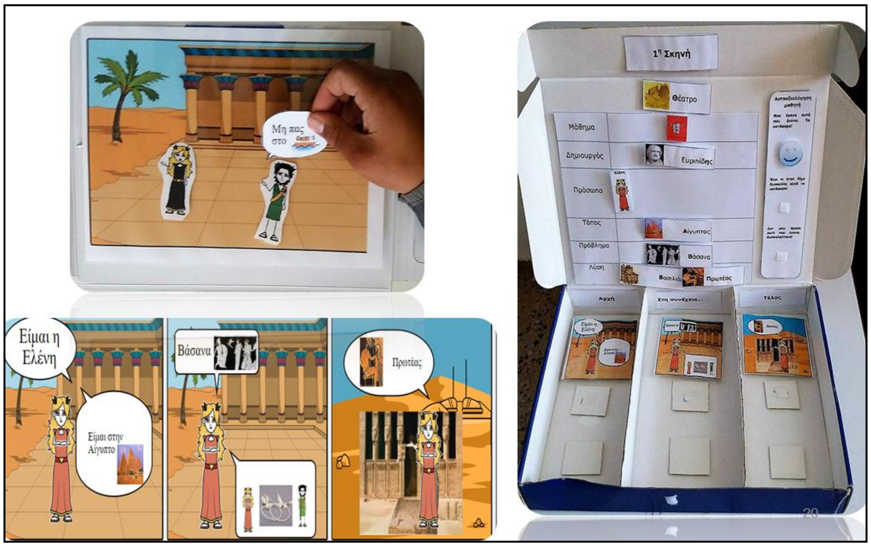

Figure 5. Student with ID understands the content of the first scene of the drama *Helens* with the help of the 3D reading machine

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